

CLAIMS

- 1 1. A manual bone anchor placement device, comprising:
2 a manually actuatable lever;
3 a resilient element;
4 a force translator comprising a distal end and a proximal end, the proximal end
5 being coupled to the lever and the distal end being coupled to the resilient element, the force
6 translator transmitting a force exerted on the lever to the resilient element; and
7 a rotator coupled to the resilient element, the rotator receiving force from the
8 resilient element and rotating in response thereto.
- 1 2. The manual bone anchor placement device of claim 1, further comprising a securing
2 element coupled to the rotator, the securing element mating with a bone anchor screw and
3 rotating when the rotator rotates, thereby applying a torque on the bone anchor screw and placing
4 the bone anchor screw into bone.
- 1 3. The manual bone anchor placement device of claim 2, wherein the securing element
2 comprises teeth and wherein the rotator comprises at least one protruding portion capable of
3 engaging the teeth.
- 1 4. The manual bone anchor placement device of claim 3, wherein the at least one protruding
2 portion comprises a pawl.
- 1 5. The manual bone anchor placement device of claim 1, further comprising a handle
2 including a groove for receiving a suture attached to a bone anchor screw.
- 1 6. The manual bone anchor placement device of claim 1, further comprising a connector
2 with a first end and a second end, the first end coupled to the force translator, and the second end
3 coupled to the lever.
- 1 7. The manual bone anchor placement device of claim 6, wherein the lever comprises a slot
2 for receiving the connector.
- 1 8. The manual bone anchor placement device of claim 6, wherein the lever further
2 comprises a pivot, the connector being positioned below the pivot, and the force translator
3 receiving a push force when the lever is manually actuated.

- 1 9. A manual bone anchor placement device, comprising:
2 a manually actuatable lever;
3 a force translator comprising a distal end and a proximal end, the proximal end
4 receiving force from the lever;
5 a rack coupled to the distal end of the force translator, receiving force from the
6 force translator, the rack moving linearly into an engaging position in response to the force from
7 the force translator;
8 a rotator positioned in close proximity to the rack, engaging with the rack when
9 the rack moves into the engaging position and rotating in response to engagement by the rack.
- 1 10. The manual bone anchor placement device of claim 9, further comprising a coupler
2 coupled to the rotator for mating with a bone anchor screw, and for rotating when the rotator
3 rotates to place the bone anchor screw into bone.
- 1 11. The manual bone anchor placement device of claim 9, further comprising a handle
2 including a groove for receiving a suture attached to a bone anchor screw.
- 1 12. The manual bone anchor placement device of claim 9, wherein the rotator is selected
2 from the group consisting of a ratchet wheel, a pawl, a pinion, and a gear.
- 1 13. The manual bone anchor placement device of claim 9, further comprising a connector that
2 connects the force translator to the lever.
- 1 14. The manual bone anchor placement device of claim 9, wherein the lever further
2 comprises a pivot, the connector being positioned below the pivot, the force translator receiving a
3 push force when the lever is manually actuated.
- 1 15. The manual bone anchor placement device of claim 9, wherein the lever further
2 comprises a pivot, the connector being positioned above the pivot, the force translator receiving a
3 pull force when the lever is manually actuated.
- 1 16. The manual bone anchor placement device of claim 9, further comprising a spring that
2 encircles an end of the force translator proximal to the rack.
- 1 17. The manual bone anchor placement device of claim 10, further comprising a spring that
2 encircles an end of the coupler proximal to the rotator.

1 18. The manual bone anchor placement device of claim 9, wherein the distal end of the force
2 translator comprises a first wedge member, and wherein the device further comprises a tubular
3 member coupled to the lever, the tubular member having a second wedge member positioned in
4 close proximity to the first wedge member for transmitting force from the lever to the force
5 translator through the first wedge member.

1 19. The manual bone anchor placement device of claim 9, wherein the force translator
2 comprises a plunger for receiving pneumatic or hydraulic force when the lever is actuated.

1 20. A manual bone anchor placement device, comprising:
2 a manually actuatable lever;
3 a driver rod comprising threads;
4 a cup coupled to the lever, positioned over the threads of the driver rod, and
5 movable axially along the driver rod upon manual actuation of the lever; and
6 a washer positioned over the threads of the driver rod, engaging the cup upon
7 manual actuation of the lever, translating force from the lever to the driver rod, and rotating the
8 driver rod.

1 21. The manual bone anchor placement device of claim 20, further comprising a coupling
2 element for mating with a bone anchor screw, and for rotating when the driver rod rotates to
3 place the bone anchor screw into bone.

1 22. The manual bone anchor placement device of claim 20, further comprising a force
2 translating member coupled to the lever at a pivot and coupled to the cup by flanges on the cup,
3 for translating force from the lever to the cup.

1 23. The manual bone anchor placement device of claim 20, further comprising a handle
2 including a groove for receiving a suture attached to a bone anchor screw.

1 24. The manual bone anchor placement device of claim 20, wherein the washer further
2 comprises at least one engaging pin for engaging the cup and the cup comprises holes for
3 receiving the at least one engaging pin.

- 1 25. The manual bone anchor placement device of claim 20, wherein the cup further
2 comprises at least one engaging pin for engaging the washer and the washer comprises holes for
3 receiving the at least one engaging pin.
- 1 26. A buttress-shaped bone anchor screw comprising a micropolished eyelet for receiving a
2 suture.
- 1 27. The bone anchor screw of claim 26, wherein the eyelet is circular, ellipsoidal, or teardrop
2 shaped.
- 1 28. A protective cover for protecting a bone anchor screw comprising a base for engaging
2 with a bone anchor placement device, a sheath coupled to the base for surrounding and protecting
3 a bone anchor screw, the sheath being collapsible for uncovering the bone anchor screw when
4 the bone anchor screw is placed into bone.
- 1 29. A kit comprising a flexible, molded sleeve for enclosing a suture therein and at least one
2 retaining clip for preventing the suture from slipping out of the sleeve.
- 1 30. The kit of claim 29, wherein the sleeve further comprises a Teflon[®] material.
- 1 31. The kit of claim 29, further comprising a buttress-shaped bone anchor screw comprising a
2 micropolished eyelet for receiving a suture.
- 1 32. The kit of claim 31, wherein the buttress-shaped bone anchor screw is pre-attached to a
2 suture.
- 1 33. The manual bone anchor placement device of claim 1, 9, or 20, further comprising:
2 a head assembly;
3 a recessed anchor mount movably disposed within the head assembly; and
4 an actuation mechanism coupled to the recessed anchor mount.
- 1 34. The manual bone anchor placement device of claim 33, wherein the actuation mechanism
2 is selected from the group consisting of a push wire and a pull wire.
- 1 35. The manual bone anchor placement device of claim 33, wherein the actuation mechanism
2 actuates the recessed anchor mount between a recessed position and an advanced position.

- 1 36. The manual bone anchor placement device of claim 33, wherein the anchor mount
2 includes an outer surface comprising at least one flat surface and the head assembly defines a
3 core comprising a mating shape.
- 1 37. The manual bone anchor placement device of claim 33 further comprising a bone anchor
2 releasably engaged to the anchor mount.
- 1 38. The manual bone anchor placement device of claim 37, wherein the anchor mount
2 includes a groove for accommodating a suture attached to the bone anchor.
- 1 39. A manual bone anchor placement device, comprising:
2 a handle;
3 a shaft extending in a distal direction from the handle;
4 a head assembly disposed at a distal end of the shaft;
5 a recessed anchor mount movably disposed within the head assembly; and
6 an actuation mechanism coupled to the recessed anchor mount.
- 1 40. The manual bone anchor placement device of claim 39, wherein the actuation mechanism
2 is selected from the group consisting of a push wire and a pull wire.
- 1 41. The manual bone anchor placement device of claim 39, wherein the actuation mechanism
2 actuates the recessed anchor mount between a recessed position and an advanced position.
- 1 42. The manual bone anchor placement device of claim 39, wherein the anchor mount
2 includes an outer surface comprising at least one flat surface and the head assembly defines a
3 core comprising a mating shape.
- 1 43. The manual bone anchor placement device of claim 39, wherein the actuation mechanism
2 is situated within a channel disposed on the handle.
- 1 44. The manual bone anchor placement device of claim 39, wherein an actuator operates the
2 actuation mechanism disposed on the handle.
- 1 45. The manual bone anchor placement device of claim 40, wherein the actuation mechanism
2 comprises a material selected from the group consisting of spring steel and nitinol.
- 1 46. The manual bone anchor placement device of claim 39 further comprising a bone anchor
2 releasably engaged to the anchor mount.

1 47. The manual bone anchor placement device of claim 39 further including a stop disposed
2 within the head assembly.